WHAT IS CLAIMED IS:

1. A method of enhancing a digital image comprising:

providing a digital image;

decomposing the provided digital image into a multi-frequency band representation including a low frequency band image and multiple different high frequency band images;

multiplying each of said high-frequency band images with a gain factor;

summing together said unmodified low frequency band image and said modified high-frequency band images to produce a reconstructed digital image; and

mapping said reconstructed digital image through a tone-scale look-up-table to map said reconstructed digital image to optical densities.

2. The method of claim 1 wherein said providing provides a digital medical image.

3. The method of claim 1 wherein said providing provides a digital radiological image acquired by one of a medical diagnostic imaging unit, a computed radiography unit, a direct digital radiography unit, and an x-ray film digitizer.

4. The method of claim 1 wherein said decomposing is effected by processing said provided digital image with a plurality of different low pass filter operators which operate to pass different low-pass images. Said low-pass images are used to generate said low-frequency band image and said multiple different high-frequency band images.

5. The method of claim 4 wherein said plurality of low pass filter operators use square wave filters.

6. The method of claim 4 wherein said plurality of different low pass filter operators use different filter kernel sizes to pass said different low-pass images.

7. The method of claim 6 wherein said plurality of different low pass filter operators include first, second and third pass filter operators having respective first, second and third kernels.

8. The method of claim 1 wherein said decomposing decomposes the provided digital image into four frequency bands as follows:

a lowest frequency band image which represents large-sized features in the digital image;

a low-to-mid frequency band image which represents mid-sized features in the digital image;

a mid-to-high frequency band image which represents the small-sized features in the digital image; and

a highest frequency band which represents very fine detail in the digital image.

9. The method of claim 8 including manipulating said lowest frequency band image to produce a dynamic range or latitude in said digital image.

10. The method of claim 8 including manipulating said low-to-mid frequency band image to produce a contrast effect without affecting the overall dynamic range of said digital image.

11. The method of claim 8 including manipulating said mid-to-high frequency band image to produce a sharpness or blurring effect of said small-sized features of said digital image.

12. The method of claim 8 including manipulating the highest frequency band image to produce a sharpness or blurring effect of very fine detail in said digital image.

13. The method of claim 1 wherein said mapping includes a brightness control for shifting the mean density of the digital image.

14. The method of claim 1 wherein said mapping further includes mapping the tone scale function to a standard gray scale display function for monochrome image presentation.

15. The method of claim 1 wherein in said mapping, said tone scale has slope at a reference density that defines dynamic range control and wherein increasing the dynamic range reduces latitude of said digital image, while increasing the dynamic range decreases the latitude to said digital image.

16. The method of claim 8 wherein said gain factor which multiplies said low-to-mid frequency band image is derived from a detail contrast control and said dynamic range control.

17. The method of claim 8 wherein said gain factor which multiplies said mid-to-high frequency band image is derived from a sharpness control and said gain factor which multiplies said low-to-mid frequency band image.

18. The method of claim 8 wherein said gain factor which multiplies said highest frequency band image is derived from a fine detail control and said gain factor which multiplies the mid-to-high frequency band image.

19. A method of enhancing a digital image comprising:

providing a digital image;

decomposing the provided digital image into a multi-frequency representation including a low frequency image and multiple different high frequency images;

multiplying each of said high frequency images with a gain factor;

summing together said unmodified low frequency image and said modified high frequency images to produce a reconstructed digital image; and

mapping said reconstructed digital image through a tone scale loop-up-table to map and reconstructed digital image to optical densities.

20. The method of claim 8 wherein said gain factors which multiply said higher frequency bands are a function of said lowest frequency band image.

21. The method of claim 16 wherein said detail contrast control is a function of said lowest frequency band image (which represents average log exposure).

22. The method of claim 21 wherein the functional form of said detail contrast control is a piecewise linear curve with breakpoints.

23. The method of claim 22 wherein said breakpoints are first assigned in density and then mapped to log exposure breakpoints via said tone scale curve providing density dependent control of the detail contrast of said image.

24. The method of claim 17 wherein the said sharpness control is a function of said lowest frequency band image (which represents an average log exposure).

25. The method of claim 24 wherein the functional form of said sharpness control is a piecewise linear curve with breakpoints.

26. The method of claim 25 wherein said breakpoints are first assigned in density and then mapped to log exposure breakpoints via said tone scale curve providing density dependent control of the sharpness of small detail of said image.

27. The method of claim 18 wherein said fine detail control is a function of the lowest frequency band image (which represents an average log exposure).

28. The method of claim 27 wherein the functional form of said fine detail control is a piecewise linear curve with breakpoints.

29. The method of claim 28 wherein said breakpoints are first assigned in density and then mapped to log exposure breakpoints via said tone scale curve providing density dependent control of the sharpness of fine detail of said image.

30. The method of claim 15 wherein manipulation of said dynamic range control does not affect the detail contrast or sharpness of small of fine detail of said image.

31. The method of claim 16 wherein manipulation of said detail contrast control does not affect the overall dynamic range or sharpness of small or fine detail of said image.